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ABSTRACT

Changes already underway in the U.S. economy have made it increasingly important for students to acquire symbolic-analytic skills and technical skills. Of all the available options for improving the education of vocational industrial teachers to help them prepare students for work in the 21st century, the most reasonable alternative appears to be that of identifying trends and issues shaping the future and developing strategies for tomorrow's needs by combining the best practices of present and past with new and creative solutions that address the concerns of the future. A systematic strategy must be developed to revitalize the preparation of well-qualified vocational industrial education teachers to prepare youths to enter the work force of the future. One way of preparing tomorrow's teachers to achieve a level of excellence is by having them move through a high-quality formal teacher education program that is consistent with state certification requirements and that provides rewards and incentives for teachers to become master teachers after moving up along the career ladder of provisional teacher, associate teacher, and standard teacher. (This paper includes a proposed framework for approved vocational industrial teacher education programs and a proposed set of guidelines for the professional studies component of the proposed framework.) (MN)

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EDUCATION AND WORK FOR THE YEAR 2000:

THE CHOICES WE FACE: IMPLICATIONS FOR

VOCATIONAL INDUSTRIAL TEACHER EDUCATION

by

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**Education and Work for the Year 2000:
The Choices We Face: Implications for
Vocational and Industrial Teacher Education**[1]

In his most recent book, *Education and Work for the Year 2000: Choices we Face,* Arthur Wirth (1992) raises concerns about the continued existence of an American democratic society in the post-industrial age. How will America define itself as a democracy under post-industrialism is the fundamental question posed by Wirth to his readers. The major threat to a democratic society, according to Wirth, is the rising dualism among the nations people caused by economic disparity between the rich and poor.

During the 1980s a dramatic shift occurred in the distribution of incomes among the population of the United States. "Between 1977 and 1990 the average income of the poorest fifth of American families declined by about 7 percent while the average income of the richest fifth of American families increased about 15 percent" (p. 193). There was also an increase in the number of working poor who fall below the poverty line. "Between 1978 and 1987 the number of working Americans who fell below the poverty level rose by nearly 2 million or 2.3 percent. Within this group, the number of full-time, year-round workers who fell below the poverty level rose even more sharply-by 43 percent" (p. 193).

One explanation for the widening income gap is the relationship between the level of education and earnings. Those individuals, particularly males, who completed four years of college, earned 80 percent more than high school graduates in 1980. By 1990 the gap had nearly doubled. (p. 194) As Robert

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Reich pointed out in his *The Work of Nations*, "if you graduated from college your earnings improved, if you did not and especially if you were male, you get poorer" (Reich, 1991, p. 207). Reich also stated that Americans tend to find themselves in three different categories: those with what he calls symbolic-analytic skills are rising, those with routine production skills are sinking, and those with person-to-person skills are sinking also but at a slower pace.

As Wirth viewed the rising economic dualism in America today he offers two choices for the future. One is to continue the existing system using standardized tests to delineate two tracks, one for students who have the capacity to use symbolic abstractions to solve problems and the remainder assigned to average and slow sections with emphasis on basic skill development. The other option would require a major shift in the nation's priorities with a decision to adopt policies and provide funding to "assure that all American children, regardless of class or race would be given opportunities to learn symbolic-analytic skills" (p. 198).

The symbolic-analytical skills as proposed by Reich and Wirth require learning that deals with abstraction, system thinking, experimentation and collaboration. *Abstraction* is the capacity for discovering patterns and meanings to simplify complexities and solve problems. *System thinking* is the ability to understand the processes by which parts of reality are linked together into wholes. *Experimental thinking* skills are the ones needed to generate and test hypotheses. The capacity to *collaborate* is needed to work in teams and communicate and share insights and ideas in creatively developing new strategies and solving problems. To this list, Wirth would add three more. One is *Disciplined effort*, taking responsibility for defining what is desired and making a commitment to acquiring goals. Another is *Application of the aesthetic* which is the capability to create settings that are aesthetically pleasing, and the skill of *weighing and making*

value judgments is needed in order to weigh policies and actions in terms of the impact on both the natural and human environments.

The author of this presentation would add one more skill to the list. A workforce is needed that has the technical skills as well as the symbolic analyst skills. The notion that young people need only to acquire analytical symbolic skills in order to become productive workers and contributing members of society is well intentioned but short sighted and will not meet the expectations of the workplace in a competitive global economy.

If this nation is to continue the heritage of a democratic society with equality of opportunity for all citizens, a major shift in policy must also occur at all levels of governance in this country. In the opinion of this author, a different policy should be embraced by the decision makers in this nation. This new policy is needed to provide the opportunity for all students, capable of graduating from high school, to acquire skills needed for employment as well as those required to continue their education. We should raise the expectations of all high school students including the four year college bound to acquire some type of technical preparation as well as the analytical skills needed for success in a post-industrial society. The technical preparation might be as elementary as keyboarding or as complex as the entrepreneurial skills needed to own and operate a small business establishment. Although individual career interests and economic situations will influence post-high school careers, the opportunity to be prepared for the workplace and further education is most critical in the ever changing environment of our post-industrial, information age society. Preparing today for the uncertainties of tomorrow will oblige us to provide a high school education for young people that will allow them to successfully accommodate to shifting labor markets and different job requirements caused by technological, political and economic changes throughout the world.

A critical component in having a well educated workforce for the future is the preparation of well qualified teachers. A recent report of the National Center on the Educational Quality of the Workforce found that the most positive influence of schooling on the labor market performance of high school graduates was the type and quality of vocational education. The report also concluded that better educated teachers produce better labor market results in terms of economic benefits for their students (Johnson & Summers, 1991). The evidence suggests there is a significant positive relationship between the quality of teachers and the subsequent earnings of students with vocational preparation. This evidence has important implications for the choices we have in for the preparation of vocational industrial education teachers now and in the future.

As the vocational industrial teacher preparation enterprise moves toward the 21st century, what are the choices we face in preparing teachers for education and work in the year 2000? One choice is to renew our efforts to improve the existing situation. The system of vocational teacher education, as currently practiced in most states, is to recruit seasoned practitioners of a craft or occupation and transform these individuals to the new career of teaching by delivering a series of school based courses by university/college teacher educators. A study by Duenk (1990) found wide variations and inconsistencies between the certification requirements of the fifty-two states and territories due primarily to the nature and quality of non-degree certification. "In none of the states were the requirements similar enough to be considered reciprocal" (p. 59). In order to improve the standards for certification, several states have added requirements for certifying basic academic skill competencies (Duenk, 1990) and occupational skills with National Occupational Competency Testing Institute or other specific skill examinations (Duenk, 1990). Other states have adopted requirements which led to degree completion as a condition of full certification.

These state regulated certification changes have had no fundamental impact on the manner in which vocational industrial teachers are prepared to teach with most teacher education programs merely adding a course or modifying course content. The heritage of our founding fathers as found in the provision of the 1917 Smith-Hughes Act remains as the traditional model for preparing vocational industrial teachers more than seventy years later. One choice is to keep the model, which has served us well in the past, and renew it through adjustments in certification requirements and teacher education courses as suggested by the study on *Standards of Excellence in Trade and Industrial Education* (Vocational Industrial Clubs of America, 1985).

A second choice is to reform in a systematic way vocational industrial teacher education by establishing a completely different approach. The use of a new paradigm to address the issues of contemporary workforce preparation is another option. A radical reform of vocational industrial teacher education would eliminate the practices of the past and focus on the requirements of the future. This choice would force the profession to chart a completely new course of action that would substantially change vocational industrial education at the secondary school level as well as the preparation of teachers to serve these students. An approach as originally expoused by the Clinton Administration, would transform the workforce preparation of youth by replacing the school based model with an industrial based model and utilize the workplace to deliver the skills, knowledge, and attitudes required for specific job training. The preparation of teachers would be dramatically changed and major responsibility would be shifted from the public arena to the private sector. Vocational industrial teacher education would be provided by masters of a craft employed by an industry rather than an educational agency. Although this choice is being advocated by some policy makers at state and national levels, it is not a realistic or appropriate course of action to take due

to the physical (laboratories and classrooms) and programmatic (curriculum and instructional materials), infrastructure which currently exists throughout the nation.

A third choice, which is a more reasonable alternative, is to identify the trends and issues shaping the future, and develop strategies for tomorrow's needs by combining the best practices of present and past with new and creative solutions that address the concerns of the future. The remainder of this discussion will focus on the development of a systematic strategy to revitalize the preparation of well qualified vocational industrial education teachers to prepare young people to enter the workforce of the future.

The workforce of tomorrow requires well qualified individuals who have the competence to immediately and successfully perform job entry requirements and be adaptable to continuous technological and organizational changes through further education and training. The well prepared worker will need the technical knowledge as well as the symbolic-analytic skills in order to obtain initial employment and maintain that employment throughout a lifetime of changing work requirements. The vocational industrial teachers of these workers most be prepared to meet the challenge of these changing workforce preparation requirements. Selection and the preparation of vocational-industrial education teachers for the workforce of tomorrow must no longer be left to chance. The traditional route of selecting teachers based on the number of years of work experience is not a viable option in the future. We must move from a position of chance to one of choice. The selection and preparation of teachers must be one that has a greater probability of success by replacing present practices with an intentional, well planned and organized program of high standards for vocational industrial teacher education.

From an historical perspective, I acknowledge that the technical preparation of vocational industrial education teachers based solely on industrial experience as practiced in 1917 was the only choice available at the time. However, the vocational-industrial education teachers needed for the twenty-first century should be masters of their profession who demonstrate the highest standard of excellence possible for their technical and professional competence. The teacher of tomorrow should accomplish this level of excellence by moving through a series of steps in a career path: (1) that is provided through a high quality formal teacher education program consistent with state certification requirements, and (2) that provides rewards and incentives for the teacher to move forward in the quest to become a master teacher.

As the model shown in Table 1 indicates, there are four levels of excellence that vocational industrial education teachers could attain. These are discussed more thoroughly in the following section.

MASTER TEACHER. The master vocational industrial education teacher would hold a masters degree and have a minimum of three years of successful teaching experience. The program of studies for the master's degree would provide the courses and experience to serve as a coordinator of work experience programs and also acquire an in-depth experience in a technical area related to the teaching specialty. The certification requirement or demonstration of competence would include national certification and a certificate of completion for a specialized technical area related to the teaching field.

STANDARD TEACHER. The standard teacher would hold a baccalaureate degree with professional teacher preparation from a four year college or university. The preparation program would include related work experience in the occupational specialty. Certification would require

Table 1.

A PROPOSED CAREER PATHWAY FOR THE PREPARATION AND CERTIFICATION OF VOCATIONAL INDUSTRIAL EDUCATION TEACHERS

LEVEL	CERTIFICATION REQUIREMENT	TEACHER EDUCATION COMPONENTS	DEMONSTRATION OF COMPETENCE
Master Teacher (Prerequisites of Standard Teacher)	Masters degree in vocational or industrial education with three years of successful high school teaching experience.	• Program of thirty semester hours or advanced professional and technical coursework. • Internship/training program required in a specialized technical area of 3 to 6 semester hours. • Course(s) for conducting cooperative work programs with related practicum • Course(s) on teaching adults	• National Board for Professional Teaching Standards Certification • Completion of advanced technical training from industry sponsor • Successful peer and/or administrative review of teaching
Standard Teacher (Prerequisites of Associate Teacher)	Bachelor's Degree in Vocational or Industrial Education	• Program of 120-130 semester hours • 30-45 semester hours of technical coursework • 15-30 semester hours of professional coursework • 45-75 semester hours of general education coursework • Work experience in a related occupational area of 2,000 hours or one year of work experience	• Successful completion of the National Teacher Education Examination • Successful completion of a national occupational competency test in related occupational area or equivalent state licensure examination

Table 1. (continued)

A PROPOSED CAREER PATHWAY FOR THE PREPARATION AND CERTIFICATION OF VOCATIONAL INDUSTRIAL EDUCATION TEACEHRS

LEVEL	CERTIFICATION REQUIREMENT	TEACHER EDUCATION COMPONENTS	DEMONSTRATION OF COMPETENCE
Associate Teacher (Prerequisites of Provisional Teacher)	Associate of Applied Science Degree • Provisional non-renewable for five years • Must be admitted and complete a BS degree program within five years • An experienced vocational education teacher/administrator be assigned as a mentor	• Program of 60 semester hours • 30 hours of technical coursework • 30 hours of general education or elective coursework • Internship in a related occupational area of 500 to 1,000 hours of work experience • Enroll in a minimum of 2 teacher education courses on methods and curriculum development within first year of employment	• Successful completion of National Occupational Competency Test in related occupational area or equivalent state licensure examination • Successful completion of National Basic Skills Examination
Provisional Teacher	High School Diploma • Provisional non-renewable certificate for 3 years • Must be enrolled during first year of teaching and complete Associate of Applied Science or equivilent within a five year time period • Minimum of one year of recent experience in a related occupational area • An experienced vocational education teacher/administrator be assigned as a mentor	• Must complete before or during employment courses on methods of teaching, curriculum, development, and laboratory management • Complete a pre-service orientation workshop prior to teaching	• Successful completion of a national occupational competency test in related area or equivalent state licensure prior to employment or duirng first year • Successful completion of a national basic skills examination before employment

successful completion of the National Teachers Examination and an occupational competency test in the related teaching specialization.

ASSOCIATE TEACHER. The associate teacher would hold the associate degree and be admitted to a four year teacher preparation program. Certification would require successful completion of the competency test or equivalent state licensuring and a passing score on a national basic skills examination. The associate teacher would hold a certificate that is not renewable unless the teacher completes the associate degree within a five year period. Certification would require completing professional preparation courses before employment and successful completion of a basic skills examination and the occupational competence examination.

PROVISIONAL TEACHER. The provisional teacher would be a high school graduate with demonstrated competence in a technical area and basic skills. The traditional form of inservice courses would be used for certification purposes.

Both the provisional and associate level teachers would be provisionally certified for five years and be required to demonstrate progress toward the baccalaureate degree to be fully certified as a vocational and industrial education teacher.

The recommended standards for the teacher preparation program are found in Tables 2 and 3. The proposed framework is based upon the standards of the National Council for the Accreditation of Teacher Education (NCATE, 1991). The proposed framework is an example of a general set of criteria that would be used in evaluating a four-year teacher preparation program for vocational industrial education teachers. The proposed guidelines are examples of specific criteria that would be developed and applied to evaluate the professional studies component of the teacher preparation program. Other criteria would be developed

for additional items of the framework for approval of vocational industrial teacher education programs.

Table 2.

A PROPOSED FRAMEWORK FOR APPROVED VOCATIONAL INDUSTRIAL TEACHER EDUCATION PROGRAMS

NUMBER	STATEMENT
I.	The goals and objectives of the vocational industrial teacher education program are based upon contemporary needs and are consistent with current research evidence that supports the curriculum design of the program.
II.	The general education component of the program provide the knowledge necessary for breadth and depth of study in the social sciences, humanities, mathematics, communication, and physical sciences.
III.	The program requires a mastery of the technical skills needed to teach the occupational area of specialization.
IV.	The opportunity to obtain knowledge of the workplace for the student occupational specialization through a work experience component is a requirement of the program.
V.	The professional studies component of the program provides the competencies and experiences needed to develop curriculum, deliver instruction, and evaluate outcomes for instructors of vocational industrial education.

Table 3.

A PROPOSED SET OF GUIDELINES FOR THE PROFESSIONAL STUDIES COMPONENT OF THE FRAMEWORK FOR APPROVED VOCATIONAL-INDUSTRIAL TEACHER EDUCATION PROGRAMS

NUMBER	GUIDELINE
1	Select the content needed to develop competence in an occupational specialization.
2	Structure a laboratory/classroom environment to accommodate the instructional design.
3	Manage a laboratory/classroom environment effectively in having students successfully acquire occupational competencies.
4	Evaluate students outcomes based upon the curriculum design and delivery of instruction.
5	Provide for the application of related areas of knowledge in the sciences, mathematics, and communications in the instructional process.
6	Establish and conduct a student organization using the VICA organizational process and procedures.

The development of standards for the preparation and certification of vocational industrial education teachers would provide a benchmark of excellence for the profession. A set of standards agreed upon by relevant and interested vocational education groups and organizations would enable states to move toward a common approach which would eliminate the great variance in teacher quality across the states. It would serve as an explicit pathway for the career development of vocational industrial education teachers and make courses taken for certification more substantive and meaningful in the process. The result should improve the quality of vocational industrial education teachers and the type of programs and instruction they will provide for the workforce of tomorrow.

The adoption of these proposals will help to ensure that well qualified technically and professionally preparated vocational industrial education teachers, who meet high standards of excellence are available to teach in our public high schools. The challenges we face in preparing the teachers of tomorrow must be assumed by the profession if we are to be a viable part of the reform movement in improving the American system of education. I would challenge the leadership of the National Association of Industrial and Technical Teacher Educators as the premier organization for leadership in the profession, to make the preparation of a high quality vocational industrial teacher the highest priority of the Association during the next five years. In addressing this challenge I would make the following specific recommendations:

1. The National Association of Industrial and Technical Teacher Educators should develop in concert with other professional organizations such as the National Association of State Directors of Vocational Education, The National Association for Trade and Industrial Education, and The University Council for Vocational Education a set of national teacher preparation and certification standards that requires a high level of

professional and technical competence for the preparation and certification of vocational industrial education teachers.

2. The completed set of vocational industrial teacher preparation and certification standards should be adopted by the organizations as the national standards and each state board of education should be urged by the organizations to incorporate them in the approval of teacher education programs and certification of instructors at the secondary school level.
3. A position statement should be developed by NAITTE that describes the federal and state policy needed for the preparation of vocational-industrial teachers who can provide youth and adults with the skills and knowledge necessary for successful entry into the workforce of America.

The choices we face as we move toward the twenty-first century are before us. Once choice is to preserve the past and continue to prepare teachers based on the approach as promulgated in the Smith-Hughes Act of 1917. This choice will continue the dualism found in the curriculum and social environment of our public schools and continue to reinforce the socio-economic bifurcation of our society. A second choice is a radical shift of responsibility to the workplace.

A third, and more reasonable choice in my view, is to create a teacher preparation policy that will fundamentally change how vocational industrial teachers are prepared and rewarded in this country. If such a policy is adopted, it will result in a well qualified teachers who will be critical components in the process of preparing youth and adults for the high performance workplace of today and tomorrow.

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